WHAT IS CLAIMED IS

1. A portable electronic device including powering means for powering electronic circuits including a data processing unit, said electronic circuits being housed in an assembly formed by a case closed by a glass, the device further including a pressure sensor and means for detecting the presence of water capable of producing electric signals to be sent to said data processing unit, said detection means including at least one capacitive sensor including a capacitor, one plate of which is formed by an electrode arranged on an inner region of the case-glass assembly and whose capacitance is capable of varying following a modification in nature of the external medium located directly in contact with an external region of the case-glass assembly opposite the electrode, such as said region coming into contact with water, wherein said pressure sensor operates in at least two powering modes, a first called the surface mode and a second called the dive mode and wherein said detection means are periodically activated to carry out measurements of a quantity representative of the value of the capacitance of said capacitor, said electronic circuits further including means for comparing at least two successive measurements of said quantity and producing an electric signal for activating said dive powering mode in response to a variation in said capacitance between two successive measurements of said quantity higher than a predefined value.

2. The device according to claim 1, wherein said electrode is transparent and arranged on the inner face of said glass, wherein said electrode has a surface area substantially equal to the surface area of said inner face of the glass and wherein said predefined value corresponds to the variation that said measured quantity undergoes between a first external medium and a second external medium when said second external medium enters into contact with said glass over a surface area representing a predefined portion of the surface area of said electrode.

3. A portable electronic device including powering means for powering electronic circuits including, in particular, a data processing unit, said electronic circuits being housed in an assembly formed by a case closed by a glass, the device further including a pressure sensor and means for detecting the presence of water capable of producing electric signals to be sent to said data processing unit, wherein said pressure sensor is capable of operating in at least two powering modes, a first called the surface mode and a second called the dive mode and wherein means for detecting the presence of water include at least a first and a second capacitive sensor each including a capacitor, one plate of which is formed by an electrode arranged on an inner region of the case-glass assembly and whose capacitance is capable of

varying following a modification in nature of the external medium located directly in contact with an external region of the case-glass assembly opposite the electrode, such as said region coming into contact with water, said detection means being periodically activated to carry out measurements of a first, respectively a second quantity representative of the value of the capacitance of said first, respectively said second capacitor, said electronic circuits further including means for comparing at least two successive measurements of said first quantity, respectively said second quantity and producing an electric signal for activating said dive powering mode if the variations respectively in said first and second quantities, between two successive measurements, are simultaneously higher than a predefined value.

4. The device according to claim 3, wherein said detection means include at least three capacitive sensors, wherein said capacitive sensors are arranged substantially regularly in proximity to the periphery of said glass and wherein said detection means produce said activating dive powering mode signal if at least half of said quantities associated respectively with said capacitive sensors simultaneously undergo respective variations, between two successive measurements, higher than said predefined value.

5. The device according to claim 3, said electronic circuits including multiplexing means for carrying out, at each activation period of said detection means, one measurement per capacitive sensor to form a series of measurements of said quantities respectively associated with said respective capacitive sensors, two successive series of measurements being stored alternately in a first and a second memory zone so as to calculate, after each series of measurements, the respective variations in each of said quantities between the last series of measurements and the preceding series of measurements.

6. The device according to claim 4, said electronic circuits including multiplexing means for carrying out, at each activation period of said detection means, one measurement per capacitive sensor to form a series of measurements of said quantities respectively associated with said respective capacitive sensors, two successive series of measurements being stored alternately in a first and a second memory zone so as to calculate, after each series of measurements, the respective variations in each of said quantities between the last series of measurements and the preceding series of measurements.

7. The device according to claim 3, said electronic circuits including multiplexing means for carrying out, at each activation period of said detection means, one measurement per capacitive sensor to form a series of measurements of said quantities respectively associated with the respective capacitive sensors, said data

processing unit being capable of calculating the mean values of said series of measurements respectively associated with said capacitive sensors, said mean values being stored respectively and alternately in a first and a second memory zone so as to calculate after each series of measurements the respective variations in each of said mean values between the last series of measurements and the preceding series of measurements, said predefined value being defined relative to the mean value of a series of measurements.

8. The device according to claim 4, said electronic circuits including multiplexing means for carrying out, at each activation period of said detection means, one measurement per capacitive sensor to form a series of measurements of said quantities respectively associated with the respective capacitive sensors, said data processing unit being capable of calculating the mean values of said series of measurements respectively associated with said capacitive sensors, said mean values being stored respectively and alternately in a first and a second memory zone so as to calculate after each series of measurements the respective variations in each of said mean values between the last series of measurements and the preceding series of measurements, said predefined value being defined relative to the mean value of a series of measurements.

9. The device according to claim 1, the device including at least one control member, preferably of the push-button type, said electrodes being transparent and arranged on the inner face of said glass, at least one of said capacitive sensors being also capable of assuring an additional control member function in said surface mode in response to an action on said control member.

10. The device according to claim 3, the device including at least one control member, preferably of the push-button type, said electrodes being transparent and arranged on the inner face of said glass, at least one of said capacitive sensors being also capable of assuring an additional control member function in said surface mode in response to an action on said control member.

11. The device according to claim 1, said detection means including, in particular, additional means for converting a first electric signal whose amplitude depends on the capacitance value of said capacitor(s) into a second periodic electric signal whose frequency depends on said capacitance and corresponds to said measured quantity.

12. The device according to claim 3, said detection means including, in particular, additional means for converting a first electric signal whose amplitude depends on the capacitance value of said capacitor(s) into a second periodic electric

signal whose frequency depends on said capacitance and corresponds to said measured quantity.

13. The device according to claim 1, wherein said pressure sensor carries out periodic measurements of the surrounding pressure, preferably every hour, in said surface powering mode, whereas it measures the surrounding pressure almost in real time in said dive mode.

14. The device according to claim 3, wherein said pressure sensor carries out periodic measurements of the surrounding pressure, preferably every hour, in said surface powering mode, whereas it measures the surrounding pressure almost in real time in said dive mode.

15. A method for detecting the presence of water in contact with a portable electronic device including powering means for powering electronic circuits including, in particular, a data processing unit, said electronic circuits being housed in an assembly formed by a case closed by a glass, a pressure sensor operating in at least two powering modes, a first called the surface mode and a second called the dive mode, the device further including detection means capable of producing electric signals to be sent to said data processing unit, said means for detecting the presence of water including at least one capacitive sensor including a capacitor, one plate of which is formed by an electrode arranged on an inner region of the case-glass assembly and whose capacitance is capable of varying following a modification in the nature of the external medium located directly in contact with an external region of the case-glass assembly opposite the electrode, such as said region coming into contact with water, said detection means being periodically activated to carry out measurements of a quantity representative of the value of the capacitance of said capacitor, the method including the periodic steps of:

a) measuring the value of said quantity;
b) calculating, at each new measurement of said quantity, the variation between its new value and the preceding value;
c) activating the dive powering mode if said variation has a higher value than a predefined value or, if not, starting at step (a) again during the next period.

16. The method according to claim 15, wherein said electronic circuits include at least two memory zones for storing, at each powering period of said detection means, the value measured for the quantity representative of the value of the capacitance of said capacitor, said memory zones being used alternately from one period to the next in order to allow, after each new measurement of said quantity, the

calculation to be carried out of the variation in said new value with respect to the preceding one.

17. The method according to claim 16, the detection means including n capacitive sensors n being at least equal to two, each of said memory zones including at least n memory addresses, wherein the method includes the steps of:

a) measuring, during a powering period of said detection means, the value of said quantity for each of said n capacitive sensors so as to form a series of n measurements;

b) calculating, at each new series of measurements, each variation between the new value of the quantity relating to each of said capacitive sensors and the corresponding preceding value;

c) activating the dive powering mode if at least half of said n variations calculated at step (b) simultaneously have respective values higher than a predefined value or, if not, starting at step (a) again during the next period.

18. The method according to claim 16, the detection means including n capacitive sensors, n being at least equal to two, wherein the method includes the steps of:

a) measuring, during a powering period of said detection means, the value of said quantity for each of said n capacitive sensors so as to form a series of n measurements;

b) calculating, at each new series of measurements, the mean value of said n measurements obtained;

c) calculating each variation between the new value of the mean calculated in step (b) and the mean value corresponding to the preceding series of measurements;

d) activating the dive powering mode if the variation calculated at step (c) has a higher value than a predefined value or, if not, starting at step (a) again during the next period.

19. The method according to claim 17, said detection means including multiplexing means and means for converting a first electric signal whose amplitude level is representative of the value of the capacitance of a capacitor into a second electric signal whose frequency is representative of said capacitance value, said measured quantity corresponding to a frequency, a series of n measurements being carried out by using said multiplexing means.

20. The method according to claim 15, wherein the powering period of the detection means has a value comprised between around 2 and 30 seconds, preferably of the order of 10 seconds.